

palæontology depends almost entirely upon private munificence for the means of research. The staff is thus to be congratulated all the more on its remarkable achievements in advancing this branch of science. The collection it has mounted for public exhibition is unique as an illustration of the facts of organic evolution, and the specimens themselves have never been surpassed as examples of skilled collecting and preparation.

A. S. W.

MANCHURIA UNDER RUSSIAN RULE.¹

THIS book, dedicated to the "Gallant Japanese Nation," is a reprint of letters from Manchuria written during the autumn of 1903 for some Far Eastern publications. The narrative of events is brought down to the outbreak of war between Russia and Japan, and a "prologue" has been added to serve as a sketch of the history of Manchuria from the earliest times of which there is any record to the

the world ten years ago. He was astonished at the success which had "attended the spread of Anglo-Saxon trade and ideas under the ægis of England's undisputed naval might," and he thought the time had come for Russia to establish an empire in the Far East. To carry out such a gigantic undertaking it was necessary to secure the services and collaboration of men of genius and untiring industry. Such a man was found in Count Cassini, the Russian Minister at Peking, whose name is associated with that of Prince Uktomsky in this vast project. "These two men," says our author, "did more than any others to set the snowball rolling down from bitter Siberia on to China."

The next step was to organise the Russo-Chinese Bank, for without this Russia could not have gained even a temporary success. M. Pokotiloff, the agent of this bank, and Mr. Victor von Grot, one of Sir Richard Hart's most valued colleagues, were entrusted with the measures necessary to ensure the credit of

the Russian Government. Success at first crowned the labours of these men, and the possibilities of the future grew more and more attractive, the ultimate destruction of China and the reduction of Japan to the rank of a secondary Power being not the least important. The first blow to Russian supremacy occurred in 1895, when Japan defeated China and obtained the cession of Liau-tung. This, however, was neutralised by skilful diplomacy, and China retained possession of the forfeited territory at the price of the concession for building the trans-Manchurian Railway. By 1900 the Russo-Chinese Bank had attained the high-water mark of prosperity. But even then there were symptoms of something not being quite right, and when the following year the Russian railway administration decreed that henceforth passenger fares and freight charges must be paid for in rouble notes the whole edifice of Russian Empire in Manchuria began to totter. The



FIG. 1.—The Entrance to Port Arthur. From "Manchu and Muscovite."

present day. The author is well versed in his subject, has travelled extensively in all three provinces of Manchuria, is a careful observer, and shows a sound judgment. His style is easy, and the book well worth reading from beginning to end. Indeed, we may say that it should be read by everyone who wishes to form a true opinion of the remarkable events now taking place in the Far East. For remote as Manchuria is from western Europe, its occupation by Russia, coupled with the lease from China of the peninsula of Kwan-tung, the construction of the "Chinese Eastern Railway," and the war are of great importance to the whole civilised world.

The story of this extraordinary leap in the dark of a great Power whose policy had been hitherto not wanting in prudence and foresight is well told by the author in his opening chapters. The idea, it seems, first occurred to Prince Uktomsky while accompanying the present Tsar, then Tsarevitch, in a tour round

defeat of the "travelling rouble" is well told by Mr. Weale—how the dollar-loving Chinaman resented the threatened loss of what he considered his birthright by the arbitrary decrees of the Russian bureaucrats, how he prepared for battle, and how finally the rouble notes, tons of which had been imported into China, were discredited and disappeared.

The three chief instruments of Russia in her policy of expansion in Manchuria were the rouble, the Russo-Chinese Bank, and the railway. These three were so intimately associated and so well planned to work together that you cannot explain one without mentioning the others. In the words of our author, "they are a three-headed Medusa that turn their threatening faces on poor China and either enchant or quell her with their looks." It was becoming evident that the task Russia had so lightly undertaken was beyond her powers. She had misjudged the resistance she would encounter from the yellow race; great as her own resources were, she had over-rated these. Too confident of her strength, and relying on her successes

¹ "Manchu and Muscovite." By B. L. Putnam Weale. Pp. xx+552. (London: Macmillan and Co., Ltd., 1904.) Price 10s. net.

in overawing the native races of Central Asia, with a great faith in her destiny, she had embarked on these projects of expansion without due preparation and almost in a reckless spirit. Russia urgently requires peace, reform and retrenchment, and all these grand schemes of expansion, whether eastward to the Pacific or south to the Persian Gulf, must be abandoned. The whole system of administration is corrupt, and as long as it remains so she cannot expect to prosper, however well her soldiers fight. The lessons of this war will, it is to be hoped, turn her attention to other matters than conquest.

In the course of three years our author visited the principal towns of Manchuria—Port Arthur and its docks; Dalny, the future commercial port, upon which millions have been wasted; Newchwang; Harbin, the great railway city; Mukden, the old capital; Tsitsihar, on the Nonni; Petuna; Ninguta; and Kirin, the centre of the lumber trade. All these places are admirably described, and the incidents of the journey, whether by road, rail, or river, are amusingly told. One of the most entertaining chapters of the book is that entitled "Russia's Great Manchurian General *alias* the Chinese Eastern Railway." What this railway has cost the Russian Government will probably never be known. The author estimates it at forty-five millions sterling, though others regard this as too moderate a sum, for many accidental charges have to be added to the original cost. There were the re-laying of the rails, for these at first were far too light to resist the train weights, the changing of the sleepers, the re-building of many miles of road destroyed during the Boxer troubles, new steel-bridge work, new feeder lines, the enormous administration buildings, and stone towers for guarding the line. There were the railway, sea-going and river-steamer services, the railway barracks, the railway mines, and many other offshoots belonging to the Chinese Eastern Railway Co. The railway managed as it is can never be a commercial success, yet so rich is the country through which it passes that if properly administered and in English hands it would pay a fair return on the outlay. At present it is a frightful failure, and the best thing that could happen would be for Russia to sell the whole undertaking to Englishmen—"the only men who have been able so far to handle the Chinese with real success in trade and industry."

We learn a good deal concerning the productions of Manchuria from this book—"the greatest wheat producer in the East, the greatest lumber-field and the greatest gold mining centre." Beans constitute at present the agricultural wealth of the country, but this will not remain so for long. Manchuria is a wheat country, and flour will in a few years have taken the place of beans in the export list. The climate is described as excessively cold in winter and hot in summer, but otherwise very healthy.

BRITISH ASSOCIATION MEETING AT CAMBRIDGE.

SECTIONAL ARRANGEMENTS.

IN an article published in *NATURE*, July 21, p. 277, a general account was given of the local arrangements for the forthcoming meeting. As the main items in the sectional programmes have now been settled, it may be of interest to give a short list of papers, lectures and discussions. A new feature in the sectional arrangements this year is the increased prominence given to discussions and afternoon lectures of a semi-popular character. The number of favourable replies to the usual invitation circular received from leading men of science in Britain justifies the hope that the meeting will be a thoroughly representative one.

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Invitations have been issued to an unusually large number of American and foreign men of science, and in spite of the St. Louis Exhibition and other counter attractions the committee hopes to have the pleasure of entertaining about 140 guests.

Section A (Physics).

The guests include Prof. Abraham, Göttingen; Prof. Burkhardt, Zürich; Prof. Birkeland, Christiania; Prof. Dieterici, Hanover; Prof. Kayser, Bonn; Prof. Korteweg, Amsterdam; Prof. Lummer, Charlottenburg; Prof. Langevin, Paris; Prof. Leduc, Paris; Prof. MacLennan, Toronto; Prof. Pockels, Heidelberg; A. L. Rotch, Director of the Blue Hill Observatory, U.S.A.; Prof. Rubens, Charlottenburg; Prof. Sommerfeld, Aix-la-Chapelle; Prof. Voigt, Göttingen; Prof. Volterra, Rome; Prof. Wood, Baltimore; Prof. Wien, Würzburg.

The most important items will be a discussion on the radio-activity of ordinary matter, opened by Prof. J. J. Thomson, a discussion on standard wave-lengths of light by Prof. Kayser, and one on the units used in meteorological measurements. Prof. Larmor will make a communication relating to the laws of radiation; Prof. Rubens promises a paper on "Reststrahlen" and the optical qualities of metals, and Prof. Wood will contribute papers on anomalous dispersion and colour photography. Prof. Poynting will deliver a popular afternoon address on radiation in the solar system, and on the last day of the meeting Prof. Fleming will give an address dealing with some recent advances in connection with wireless telegraphy. Dr. Glazebrook is expected to give an account of some recent work at the National Physical Laboratory, and Prof. Birkeland will make a communication on the connection between solar physics and meteorology.

Section A (Mathematics).

The guests include Prof. Bendixson, of Stockholm, and Prof. Meyer, of Königsberg.

The following papers have been arranged:—Prof. Franz Meyer, *die Ziele der Geometrie*; Sir Robert Ball, note on a special homographic transformation of screw-systems; Major MacMahon, the theory of linear partial differential equations; Prof. A. R. Forsyth, notes on the theory of groups; Prof. F. Y. Edgeworth, the law of error; Prof. F. Morley, geometry of the complex variable; Prof. Bromwich, on the roots of the characteristic equation of linear substitutions; A. N. Whitehead, Peano's symbolic method; Harold Hilton, notes on plane curves; G. H. Hardy, Taylor's series.

There will be an exhibition of geometrical models in the large room of the Cavendish Laboratory.

Section A (Astronomy and Cosmical Physics).

Dr. H. R. Mill, on the unsymmetrical distribution of rainfall about the track of a barometric depression; Miss F. E. Carr, the application to meteorology of the theory of correlation; H. N. Russell, on the masses of the stars. Papers are promised also by Father Cortie, S.J., Dr. Lockyer, H. F. Newall, and A. R. Hinks.

Section B.

The following have accepted the invitation to attend the meeting:—Prof. Aschan, Helsingfors; Prof. Brühl, Heidelberg; Prof. Busch, Erlangen; Prof. Cohen, Utrecht; Dr. Etard, Paris; Prof. Feist, Kiel; Prof. Franchimont, Leyden; Prof. Freund, Frankfurt; Prof. Guye, Geneva; Prof. Gabriel, Berlin; Comte de Gramont, Paris; Prof. Haller, Paris; Prof. Knoevenagel, Heidelberg; Prof. Meyer, Brunswick; Prof. Meyerhoffer, Berlin; Prof. Michael, Tufts College, U.S.A.; Dr. Noetting, Mülhausen; Prof. van Romburgh, Utrecht; Prof. Thiele, Strassburg; Prof. Thierfelder, Berlin; Prof. Traube, Berlin; Prof.